X1-UV-3727

https://www.gigahertz-optik.com/en-us/product/x1-1-uv-3727/

Product tags: UV , Handheld device ,

Description

Germicidial UV Irradiation moving Deeper in the UV-C Region

UV radiometer for excimer and low-pressure Hg germicidal lamps and UV-C LEDs

Germicidal UV irradiation is a sterilization method that uses short wavelength light in the UV-C region (100 nm to 400 nm) to break down microorganisms such as viruses, bacteria, yeasts and fungi. Most commonly, low pressure mercury lamps emitting at 254nm have been used and more recently, UV LEDs emitting in the 265 nm to 290 nm are being employed. However, the widespread use of these conventional UVC light sources is somewhat limited as they have strong carcinogenic and cataractogenic effects.

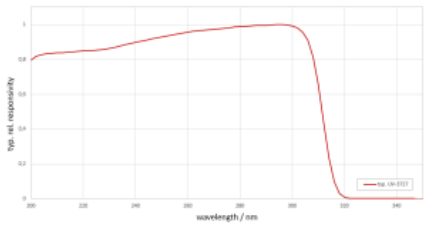
Far-UVC light, for example 222 nm produced by Kr-Cl excimer lamps, has been shown to effectively inactivate bacteria, but with less photobiological hazard for humans. This is because far-UVC light cannot penetrate human skin or eyes as deeply as longer wavelength UV radiation.

To ensure the germicidal effect of any UVC light source, the UV dose must be checked. This is achieved by measuring the UV irradiance at the location of exposure using a UV radiometer. It is essential that the radiometer is suitably calibrated for the type of UV source to be measured.

UV-3727

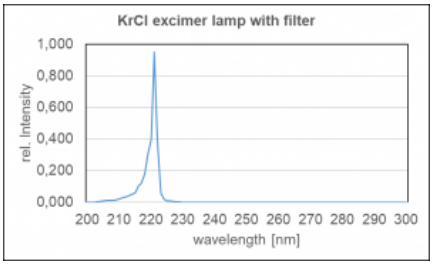
UV-3727 Irradiance Detector

for 222nm excimer lamps, UVC LEDs and low-pressure Hg lamps



Typical spectral sensitivity of the UV-3727 detector shown.

The UV-37 series detectors are specially designed for radiometric measurements in the UV spectral region and have been proven in industrial and scientific use over many years. The UV-3727 model provides the particular capability of measuring 222nm excimer lamps (Kr-Cl) typically used for germicidal applications. Additionally, it enables the measurement of other UVC germicidal source types including low pressure Hg lamps and UV LEDs.



Typical spectral power distribution of Kr-Cl excimer lamp with filter used for germicidal applications.

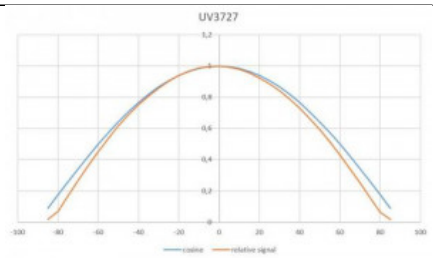
The UV-3727 detector incorporates a photodiode that has extended deep-UV responsivity. Only radiation in the required spectral sensitivity range is measured (Figure 2). In addition to its calibration at 222nm, selectable calibration factors for common UV LED wavelengths and low-pressure Hg lamps are included.

To measure the irradiance, the detector's entrance optic is a diffuser with a cosine field of view, which must be positioned in the desired plane of measurement. The diffuser and photodiode are pre-aged with UV radiation to significantly reduce the inevitable aging process that results from exposure to UV radiation. The UV-3727 detector shows very little aging

effects even in intensive use. Any changes are recorded and corrected as part of the recommended annual recalibration.

The photodiode of the UV-3727 detector offers a strictly linear relationship between the measurement signal and the irradiance in the range from a few pico amps (10^{-12} A) to several micro amps (10^{-6} A). When connected to the Gigahertz-Optik X1 meter (Figure 1) it provides a linear measurement range up to at least 1000 mW / cm² with a resolution of 0.002µW / cm² (@222 nm).

For more details see the product page of the UV-3727 detector.



Typical field of view with good cosine correction

Traceable Calibration by our Calibration Laboratory

Reliable measurements in absolute units require the calibration of the measuring device with traceability to national metrological institute (NMI) standards. Since 1993, the Gigahertz-Optik measuring laboratory has been accredited as a calibration laboratory by the PTB (Physikalisch-Technische Bundesanstalt) and the DAkkS (German Accreditation Body) for the measurement of spectral responsivity and spectral irradiance (D-K-15047-01-00). Since then, all factory calibrations have been closely based on the calibration standards and quality management of the accredited calibration laboratory. Therefore, the factory calibrations of Gigahertz-Optik offer the highest possible level of traceability and are accepted worldwide.

In accordance with the requirements of individual industrial sectors, part of the calibration laboratory is accredited as a DIN EN ISO / IEC 17025 test laboratory by the DAkkS (D-PL-15047-01-00). As a result, Gigahertz-Optik can optionally offer a DIN EN ISO / IEC 17025 test certificate for the calibration of the X1-UV-3727 in addition to the factory certificate.

The UV-3727 detector is calibrated for its spectral responsivity. When performing a measurement, either the 222nm excimer wavelength or the nominal wavelength of the UV-LED or Hg lamp can be selected on the X1-1 meter.

Measuring device X1

The X1 measuring device evaluates the signal from the UV-3727 detector and displays the measured irradiance in absolute units, mW / cm². The high-quality signal amplifier of the meter supports the very large dynamic range of the detector with 7 decades of gain ranges. In addition to irradiance, the dose can be displayed in mJ / cm². The measuring device offers a ‘peak-hold’ display function. The ergonomic housing of the device with its two AA batteries supports mobile use. Alternatively, the measuring device can be operated via its USB interface with the available application software for PCs. A software development kit (SDK) enables the measurement device to be integrated into user-written software.

Specifications

General	
Short description	UV radiometer for UV-C germicidal sources including excimer, low-pressure Hgand UV LEDs
Main features	Mobile measuring device with separate detector. Easy to use. Large measuring range for high radiation intensities for disinfection and low radiation levels for the evaluation of the UV radiation risk.
Measurement ranges	Measuring range up to 1000 mW/cm² at 222 nm and to 900 mW/cm² at 254 nm. N.E.I. typically 0.002 µW/cm²
Typical applications	Germicidal irradiance and dose of UVC sources including excimer lamps at 222 nm
Calibration	Calibration of the absolute responsivity at 222 nm, 254 nm and UV LED wavelengths (220 - 300) nm in 5 nm steps.
Measurement Head	
Broadband detector	UV-3727 detector for UV-C LEDs, excimer and low-pressure Hg germicidal lamps UV-3727 data sheet
Accessories	
Display	X1 Handheld meter for display of irradiance mW/cm^2 and dose J/cm^2 with peak-hold function. X1-1 data sheet

Downloads

Type	Description	File-Type	Download
Drawing	UV-3727	pdf	https://www.gigahertz-optik.com/assets/Uploads/V127892-v2.pdf

Purchasing information

Article-Nr	Modell	Description
Product		
15316015	UV-3727-5-V04	Detector with -5 type connector. Calibration with factory calibration certificate - UV LED (220 to 300) nm
15312064	UV-3727-5	Detector with -5 type connector. Calibration with factory calibration certificate - UV LED (250 to 300) nm
15312065	X1-5	Instrument for use with UV-3727-5, 2 x 1.5 V AA batteries, USB cable, manual.
15312062	UV-3727-4	Detector with -4 type connector. Calibration with factory calibration certificate - UV LED (250 to 300) nm
15298890	X1-1	Instrument for use with UV-3727-4, 2 x 1.5 V AA batteries, USB cable, manual
Re-calibration		

Article-Nr	Modell	Description
15312098	K-UV3727-E-S-V01	Calibration of UV-3727 with factory certificate (absolute responsivity at 222nm, 254 nm and UV LED wavelengths (250 - 300) nm in 5 nm steps).
15312098	K-UV3727-E-S	Calibration of UV-3727 with factory certificate (absolute responsivity at 222nm, 254 nm and UV LED wavelengths (250 - 300) nm in 5 nm steps).
15312949	KP-UV3727X1-E-I	Option: DIN EN ISO/IEC 17025 Test Certificate (DAkkS) for 254 nm Hg lamps. Contact sales team for other wavelength options.
15312946	KKP-UV3727X1-E-I	DIN EN ISO/IEC 17025 Test Certificate (DAkkS) for 254 nm Hg lamps. Contact sales team for other wavelength options. Includes factory calibration.
15300671	K-X11-C	Current calibration and adjustment of Gigahertz-Optik´s optometer X1-1 by use of a calibrated current source. Calibration certificate.
Software		
15298167	S-X1	User software for X1 Optometer.
15298071	S-SDK-X20	Software development kit for software implementation of the X20 electronic into custom made software. Support X1-1, X1-5, X1-PCB.
Accessories		
15297539	BHO-11	Hardcase for X1 instrument and UV-3727 detector connected to the meter.
15312791	UV-37xx-Z01	80° Field of View Adapter
15312782	UV-37xx-Z02	Bracket to mount UV-3727 detector head on M6 threads.

Contact, Calibration, Service & Support

We are known worldwide for excellent technical consulting and after sales support. Contact us to find together the best solution for you. Our services:

- Technical Consulting & Sales
- After-Sales Support
- Calibrations & Re-Calibrations (ISO/IEC 17025 Calibration Services, factory calibration, Calibration of Third-Party Products)
- Repairs & Updates
- OEM & Feasibility Consulting of Customized Solutions

Send us your inquiry or contact us by phone or e-mail. We would welcome your feedback too or review us on Google.

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